

What is claimed is:

1. A method for processing the oil shale species, comprising the steps of:

5 (a) deoiling the powdered oil shale species by dry distilling in the fluidized bed reactor, thereby producing oil gas and deoiled oil shale; and

(b) recovering the resultant oil gas.

2. The method according to claim 1, further comprising the step of:

10 (c) decarbonizing the deoiled oil shale in the fluidized bed reactor in the presence of oxygen, under the reaction pressure of 0.1-0.6 MPa, the temperature of 500-800°C, and the volume ratio of gas to solid of 1.0-20.0:1 V/V, thereby obtaining the heat and the deoiled and decarbonized oil shale.

3. The method according to claim 1, wherein the average particle size of the powdered oil shale species is 50-500 micrometers.

15 4. The method according to claim 3, wherein the average particle size of the powdered oil shale species is 60-200 micrometers.

5. The method according to claim 1, wherein the conditions in the step (a) include the reaction pressure of 0.1-0.6 MPa, the temperature of 400-800°C, and the volume ratio of gas to solid of 1.0-20.0:1.

20 6. The method according to claim 1, further comprising the following steps: fractionating the recovered oil gas to produce tower top gas, gasoline fraction, diesel oil fraction, coal pitch and heavy shale oil; and

delivering the heavy shale oil back to the fluidized bed reactor for distilling and deoiling for recycled use.

25 7. The method according to claim 6, further comprising the following steps: separating the resultant tower top gas to obtain the discharged dry gas, liquefied gas and condensate oil; and

delivering a portion of the discharged dry gas in high temperature back to the fluidized bed reactor for distilling and deoiling for recycled use.

30 8. The method according to claim 1, wherein the oil shale species include oil shale, coal, coal gangue, peat coal, peat cube, or the mixture thereof.

9. The method according to claim 1, wherein the fluidized bed reactor in the steps (a) and (c) is selected from the group consisting of reactor riser, batch-type fluidization kettle reactor, bubbling-type fluidized bed reactor, and moving bed reactor.

35 10. A device for processing the oil shale species, comprising:

(a) a fluidized bed reactor for dry distillating and deoiling, having an inlet of the oil shale species, an inlet of heavy shale oil, an inlet of high temperature dry gas, an outlet of oil gas, and an outlet of the deoiled oil shale;

5 (b) a fractionating tower, having a pipe and inlet associated with the oil gas outlet of the fluidized bed reactor for distillating and deoiling, and an outlet of fractions;

(c) a fluidized bed reactor for decarbonization, having an pipe and inlet associated with the outlet of deoiled oil shale of the fluidized bed reactor for distillating and deoiling, an inlet of air, an outlet of flue gas, and an outlet of deoiled and decarbonized oil shale.

10